

What is claimed is:

Sub. B1>

1. A synthetic resin container closure which has a circular top panel wall and a cylindrical skirt wall extending downwardly from the peripheral edge of the top panel wall and which is formed from a synthetic resin as a single unit, wherein
  - an outer cylindrical sealing protrusion extending downwardly, an inner cylindrical sealing protrusion extending downwardly and an annular sealing ridge located between the outer cylindrical sealing protrusion and the inner cylindrical sealing protrusion and projecting downwardly are formed on the inner surface of the top panel wall;
  - when the container closure is mounted on the mouth-neck portion of a container, the inner peripheral surface of the outer cylindrical sealing protrusion is brought into close contact with the outer peripheral surface of the mouth-neck portion, the outer peripheral surface of the inner cylindrical sealing protrusion is brought into close contact with the inner peripheral surface of the mouth-neck portion, and the annular sealing ridge is brought into close contact with the top surface of the mouth-neck portion; and
    - in a state before the container closure is mounted on the mouth-neck portion of the container, the minimum internal diameter D1 of a portion to be brought into close contact with the outer peripheral surface of the mouth-neck portion, of the inner peripheral surface of the outer cylindrical sealing protrusion is smaller than the external diameter D2 of the outer peripheral surface to be brought into close contact, of the mouth-neck portion and satisfies  $0.05 \text{ mm} \leq (D2 - D1) \leq 0.60 \text{ mm}$ , and the maximum external diameter D3 of a portion to be brought into close contact with the mouth-neck portion, of the outer peripheral surface of the inner cylindrical sealing protrusion is larger than the internal diameter D4 of the inner peripheral surface to be

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brought into close contact, of the mouth-neck portion and satisfies  $0.25 \text{ mm} \leq (D_3 - D_4) \leq 1.50 \text{ mm}$ .

2. The container closure of claim 1, wherein the outer  
 5 peripheral surface of the inner cylindrical sealing  
 protrusion extends downwardly in such a manner that it is  
 inclined outward in a radial direction at an inclination  
 angle  $\theta_1$  with respect to the center axis of the container  
 closure and then, extends downwardly in such a manner that  
 10 it is inclined inward in a radial direction at an inclination  
 angle  $\theta_2$  with respect to the center axis.

*Sub C15*

3. The container closure of claim 2, wherein the  
 inclination angle  $\theta_1$  is 5 to  $25^\circ$  and the inclination angle  
 $\theta_2$  is 5 to  $30^\circ$ .

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4. The container closure of claim 2, wherein the inner  
 peripheral surface of the inner cylindrical sealing  
 protrusion extends downwardly in such a manner that it is  
 20 inclined outward in a radial direction at an inclination  
 angle  $\theta_3$  with respect to the center axis and then, extends  
 substantially parallel with the center axis.

5. The container closure of claim 2, wherein the outer  
 25 peripheral surface of the inner cylindrical sealing  
 protrusion has the maximum external diameter  $D_3$  at a position  
 below, and away from, the inner surface of the top panel wall  
 by a length  $L_1$  of 2.50 to 3.50 mm.

- 30 6. The container closure of claim 4, wherein the  
 inclination angle  $\theta_3$  of the inner peripheral surface of the  
 inner cylindrical sealing protrusion is larger than the  
 inclination angle  $\theta_1$  of the outer peripheral surface of the  
 inner cylindrical sealing protrusion at a position above the  
 35 portion having the maximum external diameter  $D_3$ .

7. The container closure of claim 1, wherein the inner peripheral surface of the outer cylindrical sealing protrusion extends downwardly in such a manner that it is  
5 inclined inward in a radial direction at an inclination angle  $\theta_4$  with respect to the center axis and then, extends downward in such a manner that it is inclined outward in a radial direction.

*Sub C1 to*

8. The container closure of claim 7, wherein the inclination angle  $\theta_4$  is 13 to 23°.

*Sub B3 >* 9. The container closure of claim 7, wherein the outer peripheral surface of the outer cylindrical sealing  
15 protrusion extends downwardly in such a manner that it is inclined inward in a radial direction at an inclination angle  $\theta_5$  with respect to the center axis.

*Sub C2 to*

10. The container closure of claim 9, wherein the inclination angle  $\theta_5$  is larger than the inclination angle  $\theta_4$  and is 15 to 25°.

*Sub B4 >*

11. The container closure of claim 7, wherein the inner peripheral surface of the outer cylindrical sealing  
25 protrusion has the minimum internal diameter D1 at a position below, and away from, the inner surface of the top panel wall by a length L2 of 0.60 to 1.50 mm.

12. The container closure of claim 1, wherein a plurality  
30 of ribs are formed on the inner surface of a center portion located on the inner side of the inner cylindrical sealing protrusion of the top panel wall, the thickness T1 of the center portion of the top panel wall is 0.80 to 1.20 mm, the thickness T2 of each of the ribs is 0.20 to 1.00 mm, and the  
35 total (T1 + T2) of the thickness T1 and the thickness T2 is

1.20 to 1.80 mm.

13. The container closure of claim 12, wherein the thickness T1 is 0.90 to 1.10 mm.

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14. The container closure of claim 12, wherein the thickness T2 is 0.30 to 0.50 mm.

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15. The container closure of claim 12, wherein the total (T1 + T2) of the thickness T1 and the thickness T2 is 1.30 to 1.50 mm.

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16. The container closure of claim 12, wherein the ribs extend radially.

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17. The container closure of claim 16, wherein the ribs are arranged at equiangular intervals and extend continuously from the center of the center portion to the peripheral edge of the top panel wall.

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18. The container closure of claim 12, wherein the ribs have a rectangular cross sectional form and when in a bottom view, the area of the center portion of the top panel wall is represented by S1 and the total area of the ribs is represented by S2, S1 and S2 satisfy  $0.10S1 < S2 < 0.40S1$ .

19. The container closure of claim 18, wherein S1 and S2 satisfy  $0.15S1 < S2 < 0.35S1$ .

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20. A container closure which has a circular top panel wall and a cylindrical skirt wall extending downwardly from the peripheral edge of the top panel wall, a cylindrical sealing protrusion extending downwardly to be brought into close contact with the inner peripheral surface of the mouth-neck portion of a container being formed on the inner surface of

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the top panel wall and which is formed from a synthetic resin as a single unit, wherein

a plurality of ribs are formed on the inner surface of a center portion located on the inner side of the cylindrical sealing protrusion of the top panel wall, the thickness T1 of the center portion of the top panel wall is 0.80 to 1.20 mm, the thickness T2 of each of the ribs is 0.20 to 1.00 mm, and the total ( $T_1 + T_2$ ) of the thickness T1 and the thickness T2 is 1.20 to 1.80 mm.

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21. The container closure of claim 20, wherein the thickness T1 is 0.90 to 1.10 mm.

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22. The container closure of claim 20, wherein the thickness T2 is 0.30 to 0.50 mm.

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23. The container closure of claim 20, wherein the total ( $T_1 + T_2$ ) of the thickness T1 and the thickness T2 is 1.30 to 1.50 mm.

24. The container closure of claim 24, wherein the ribs extend radially.

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25. The container closure of claim 24, wherein the ribs are arranged at equiangular intervals and extend continuously from the center of the center portion to the peripheral edge of the top panel wall.

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26. The container closure of claim 20, wherein the ribs have a rectangular cross sectional form and when in a bottom view, the area of the center portion of the top panel wall is represented by S1 and the total area of the ribs is represented by S2, S1 and S2 satisfy  $0.10S_1 < S_2 < 0.40S_1$ .

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27. The container closure of claim 26, wherein S1 and S2

satisfy  $0.15S1 < S2 < 0.35S1$ .

28. A synthetic resin container closure which has a circular top panel wall and a cylindrical skirt wall extending 5 downwardly from the peripheral edge of the top panel wall and which is formed from a synthetic resin as a single unit, wherein

an outer cylindrical sealing protrusion extending 10 downwardly, an inner cylindrical sealing protrusion extending downwardly and an annular sealing ridge which is located between the outer cylindrical sealing protrusion and the inner cylindrical sealing protrusion and projects downwardly are formed on the inner surface of the top panel wall;

15 when the container closure is mounted on the mouth-neck portion of a container, the inner peripheral surface of the outer cylindrical sealing protrusion is brought into close contact with the outer peripheral surface of the mouth-neck portion, the outer peripheral surface of the inner 20 cylindrical sealing protrusion is brought into close contact with the inner peripheral surface of the mouth-neck portion, and the annular sealing ridge is brought into close contact with the top surface of the mouth-neck portion;

in a state before the container closure is mounted on 25 the mouth-neck portion of the container, the maximum external diameter D3 of a portion to be brought into close contact with the inner peripheral surface of the mouth-neck portion, of the outer peripheral surface of the inner cylindrical sealing protrusion is larger than the internal diameter D4 30 of the inner peripheral surface to be brought into close contact, of the mouth-neck portion and satisfies  $0.25 \text{ mm} \leq (D3 - D4) \leq 1.50 \text{ mm}$ ; and

35 the inner peripheral surface of the outer cylindrical sealing protrusion extends downwardly in such a manner that it is inclined outward in a radial direction at an inclination

angle  $\theta_6$  with respect to the center axis and then, extends downwardly and radially outwardly in an arc form.

*Sub C1*

29. The container closure of claim 28, wherein the outer peripheral surface of the outer cylindrical sealing protrusion extends substantially parallel with the center axis.

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30. The container closure of claim 28, wherein the outer peripheral surface of the inner cylindrical sealing protrusion extends downwardly in such a manner that it is inclined outward in a radial direction at an inclination angle  $\theta_1$  with respect to the center axis of the container closure and then, extends downwardly in such a manner that it is inclined inward in a radial direction at an inclination angle  $\theta_2$  with respect to the center axis.

*Sub C2*

31. The container closure of claim 30, wherein the inclination angle  $\theta_1$  is 5 to 25° and the inclination angle  $\theta_2$  is 5 to 30°.

*Sub B2>*

32. The container closure of claim 30, wherein the inner peripheral surface of the inner cylindrical sealing protrusion extends downwardly in such a manner that it is inclined outward in a radial direction at an inclination angle  $\theta_3$  with respect to the center axis and then, extends substantially parallel with the center axis.

33. The container closure of claim 30, wherein the outer peripheral surface of the inner cylindrical sealing protrusion has the maximum external diameter D3 at a position below, and away from, the inner surface of the top panel wall by a length L1 of 2.50 to 3.50 mm.

35 34. The container closure of claim 32, wherein the

inclination angle  $\theta_3$  of the inner peripheral surface of the inner cylindrical sealing protrusion is larger than the inclination angle  $\theta_1$  of the outer peripheral surface of the inner cylindrical sealing protrusion at a position above the 5 portion having the maximum external diameter D3.

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